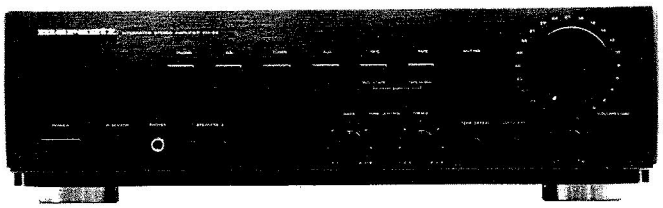
Service Manual

74 PM53 / 01B / 02B / 05B / 01G / 02G

Integrated stereo amplifier



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marantz®

model PM-53

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MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available at our National Marantz Subsidiary or Agent.

MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands
Phone : +31-40-732241
Fax : +31-40-735578

ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which the part is required
5. Way of shipment
6. Signature: any order form or telex must be signed, otherwise such part order will be considered as null and void.

ADDRESSES

AUSTRALIA
MARANTZ AUSTRALIA
Figtree Drive
Australia Centre
Homebush, NSW 2140
AUSTRALIA

AUSTRIA
MARANTZ
Hietzinger Kai 137a
1130 Wien
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Helsingfors 52
Finland

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Longford Middlesex UB7 OEH,
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Piazza IV Novembre 3
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AL ALAMIAH ELECTRONICS
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MARANTZ S.A.
10 Bond Street
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Martinez Villergas 2
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MARANTZ
Box 1324
17125 Solna
Sweden

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MARANTZ SWITZERLAND
Postfach
8010 Zürich-Müllingen
Switzerland

TRADING
MARANTZ TRADING
P.O.Box 20008
Building SFF 2
5600 JB Eindhoven
The Netherlands

All of the above locations are fully equipped to take care of your total service needs or can advice you. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

TECHNICAL SPECIFICATIONS (DIN)

Power output
RMS 8 Ohms (20 Hz - 20 kHz) ..... 65 / 80 W
Din 8 Ohms / 4 Ohms ..... 70 / 90 W

IHF dynamic power
8 Ohms / 4 Ohms ..... 90 / 110 W
THD at 8 Ohms RMS rated output ..... 0.008 %
Intermodulation distortion ..... 0.008 %
Damping factor 100

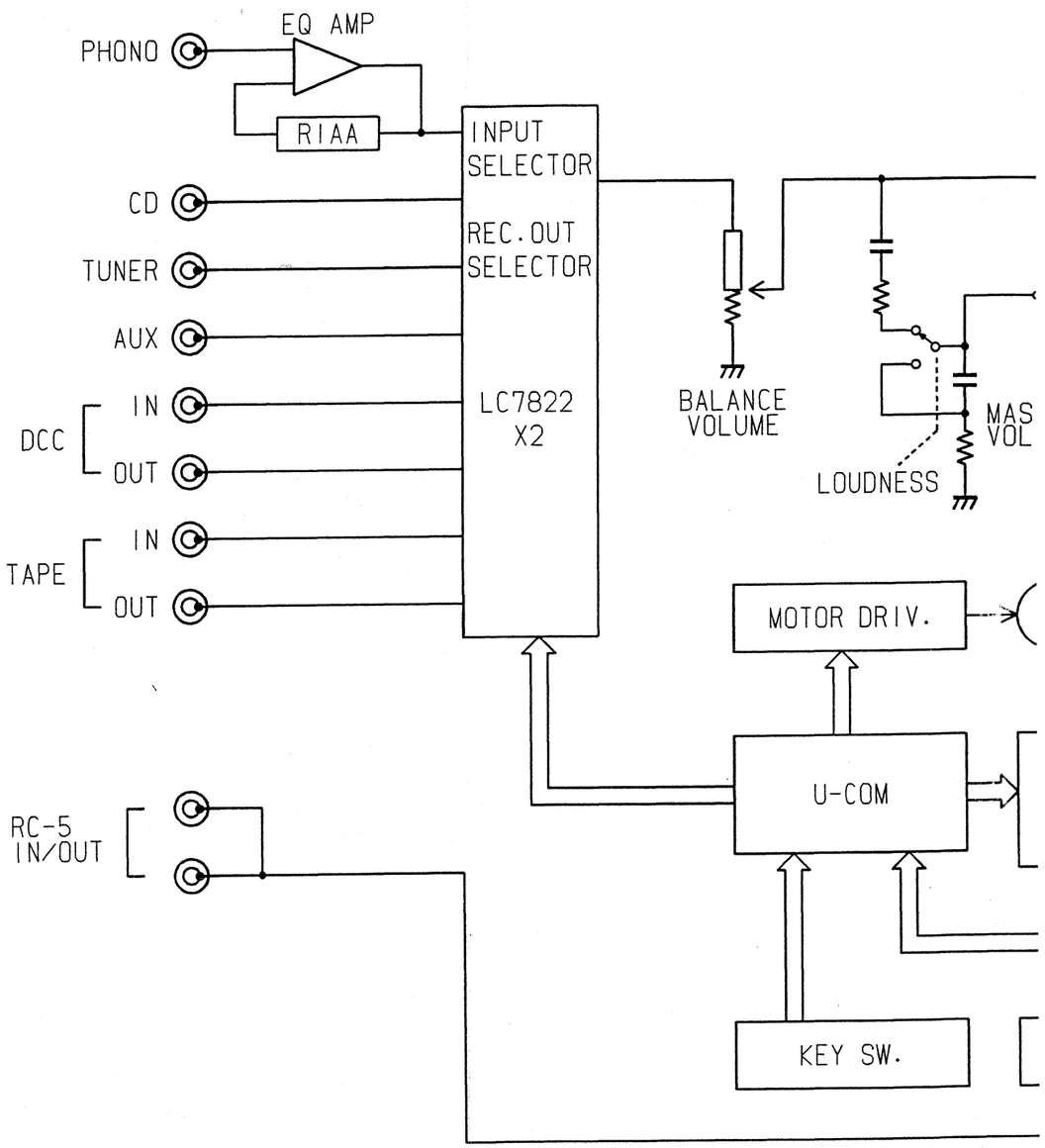
Magnetic cartridge input
Input sensitivity impedance ..... 2.5 mV / 47 k ohms
Accuracy of frequency response to RIAA ..... 0.5 dB
Signal to noise ratio ..... 93 dB

Tuner / CD / Aux / Tape inputs
Input sensitivity impedance ..... 150 mV / 33 k ohms
Signal to noise ratio ..... 103 dB
Frequency response (-1 dB) ..... 10 - 70 kHz
Tone characteristic (100 Hz and 10 kHz) ..... ± 6 dB
Channel separation ..... > 85 dB

General
Power Requirements
/ 01B / 01G version (4 voltages) ..... 110 / 120 / 220 / 240 V AC, 50 / 60 Hz
/ 02B / 02G version ..... 230 V AC 50 Hz
/ 05B version ..... 240 V AC 50 Hz
Dimensions
Panel width ..... 420 mm
Panel Height ..... 118 mm
Depth ..... 300 mm
Weight
Unit alone ..... 6.3 kg

Specifications subject to change without prior notice.

1. BLOCK DIAGRM



.....65 / 80 W
.....70 / 90 W

.....90 / 110 W
.....0.008 %
.....0.008 %
.....100

mV / 47 k ohms
.....0.5 dB
.....93 dB

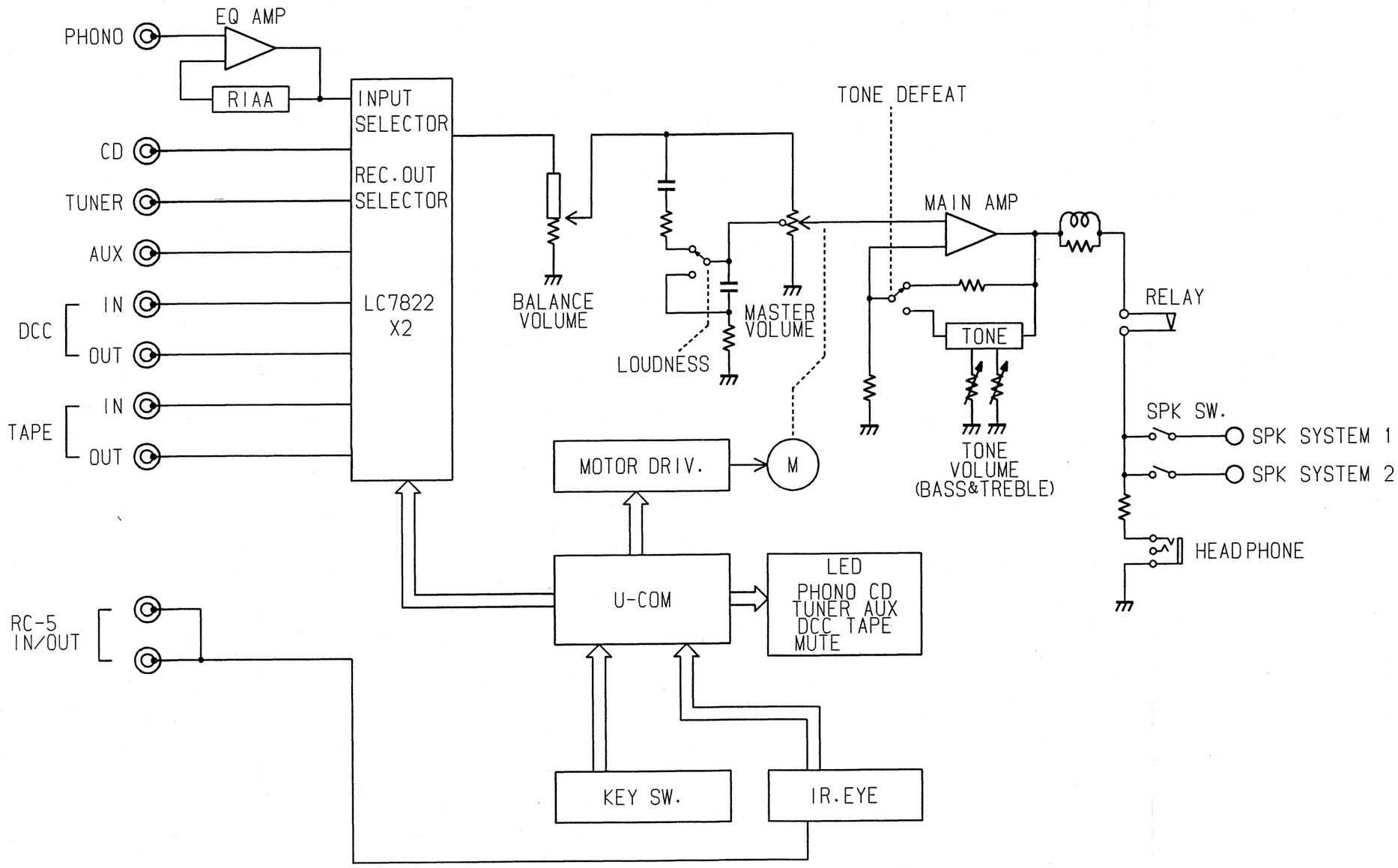
mV / 33 k ohms
.....103 dB
..... 10 - 70 kHz
.....± 6 dB
.....> 85 dB

/ AC, 50 / 60 Hz
230 V AC 50 Hz
240 V AC 50 Hz

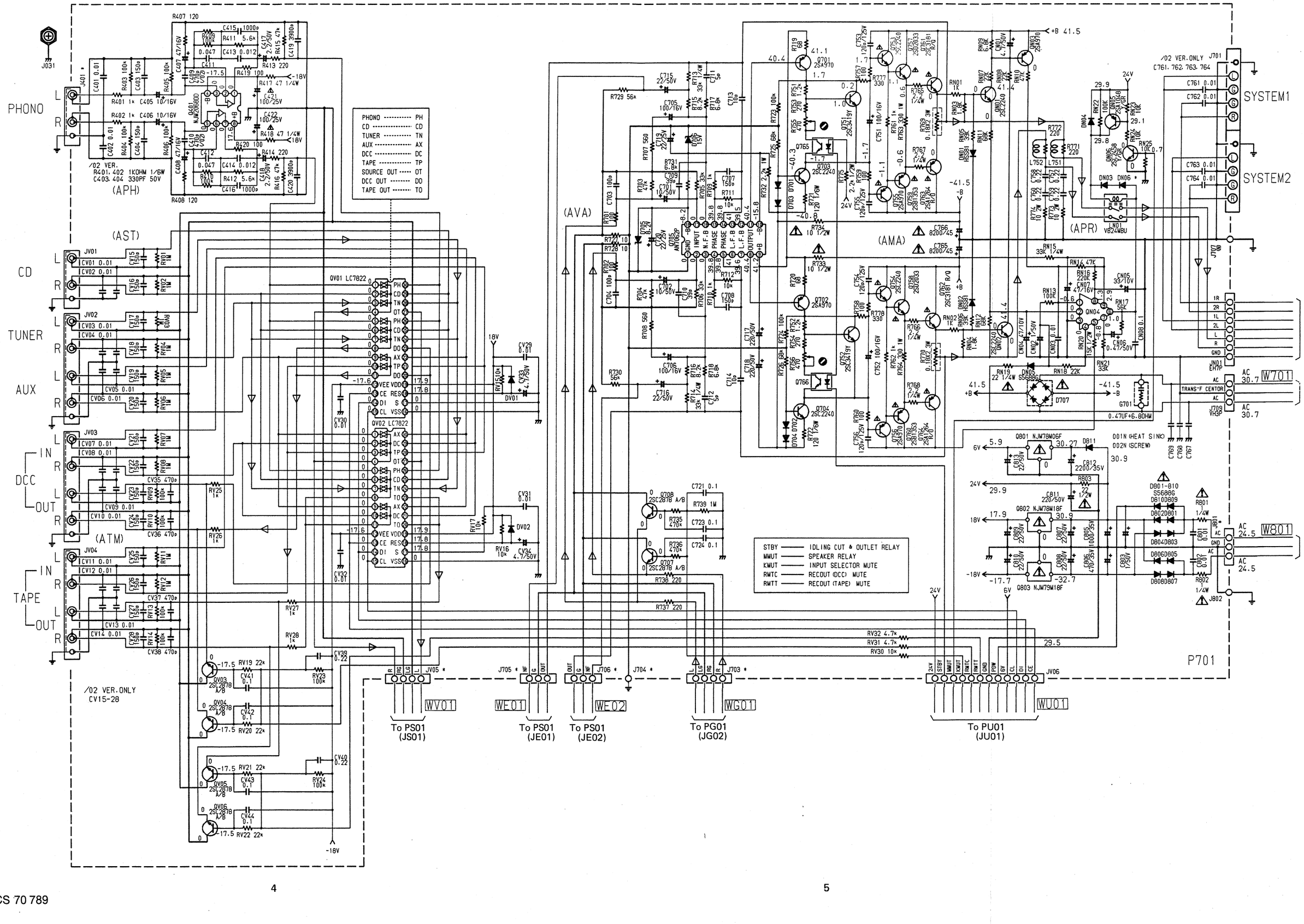
.....420 mm
.....118 mm
.....300 mm

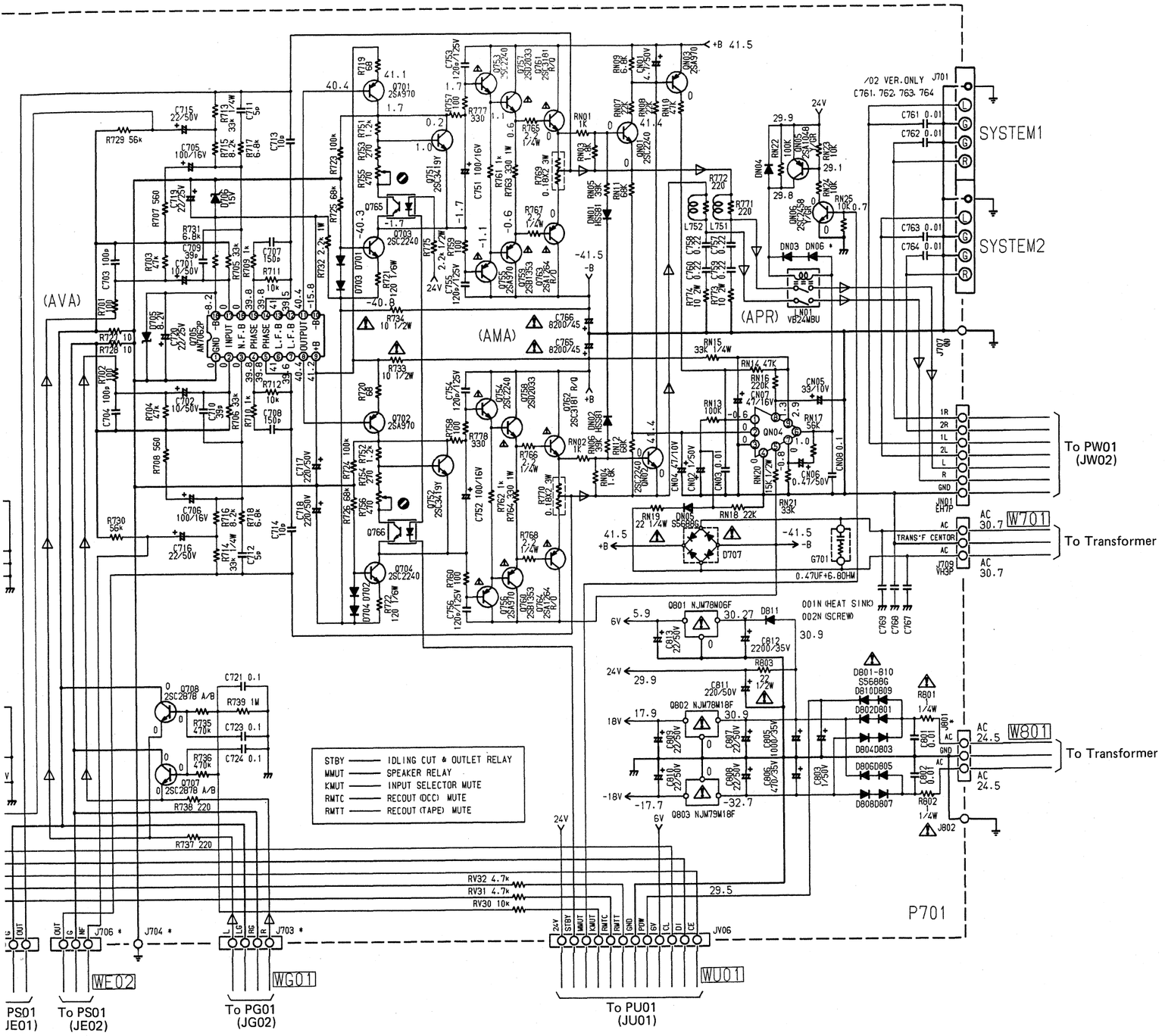
.....6.3 kg

1. BLOCK DIAGRM

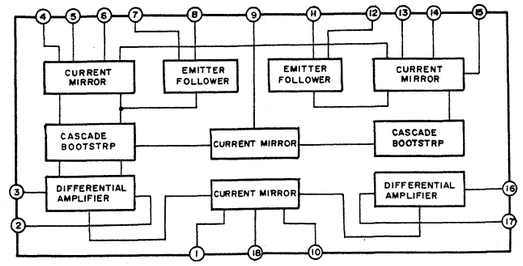


2. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)

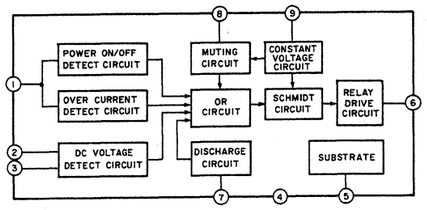




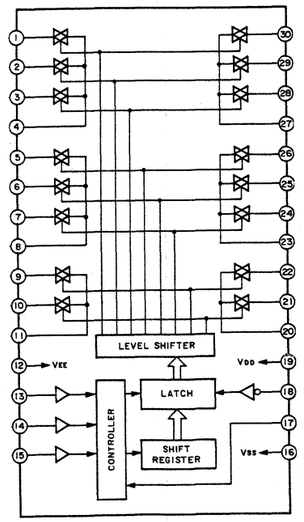
Q705 : AN7062P

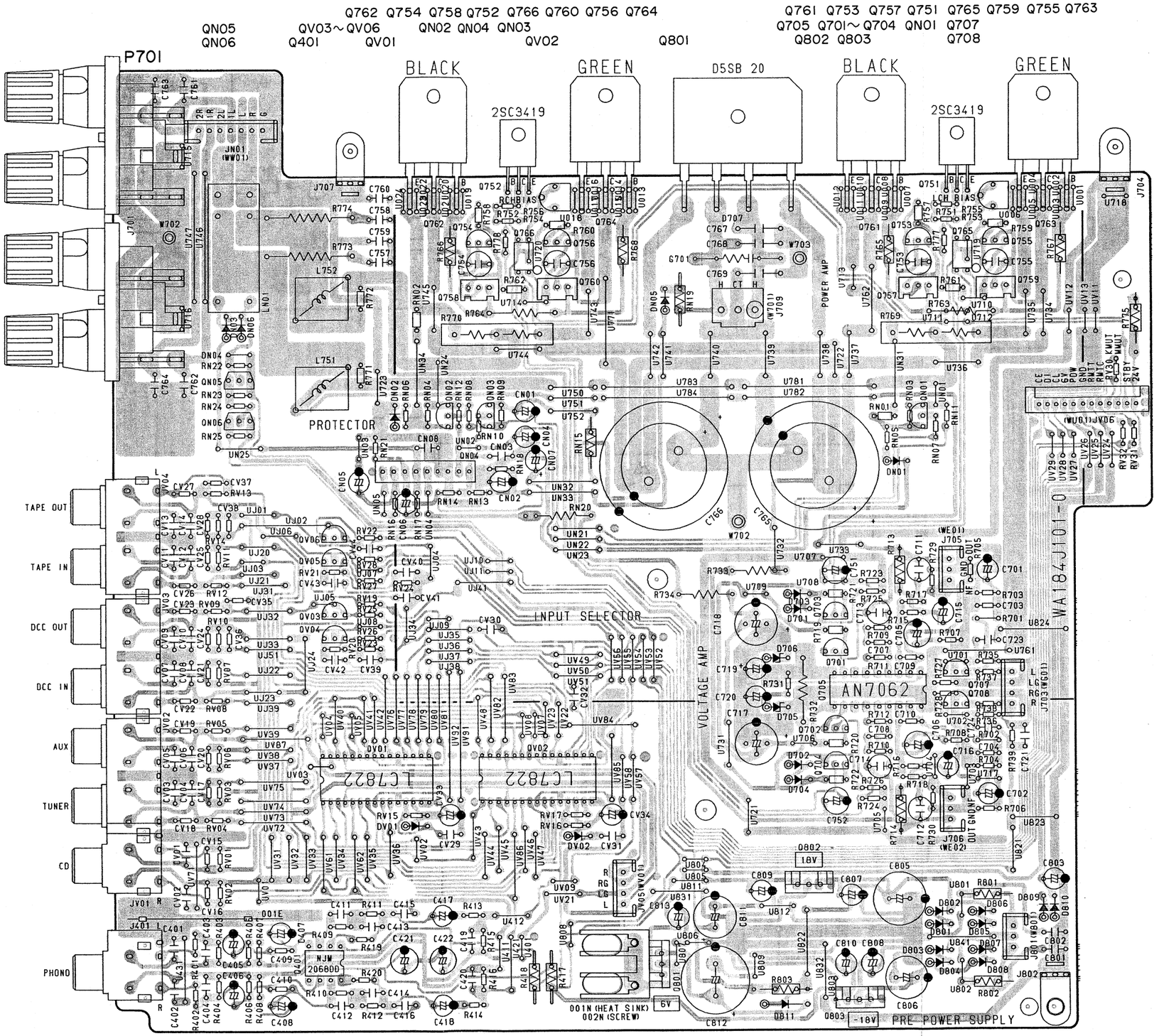


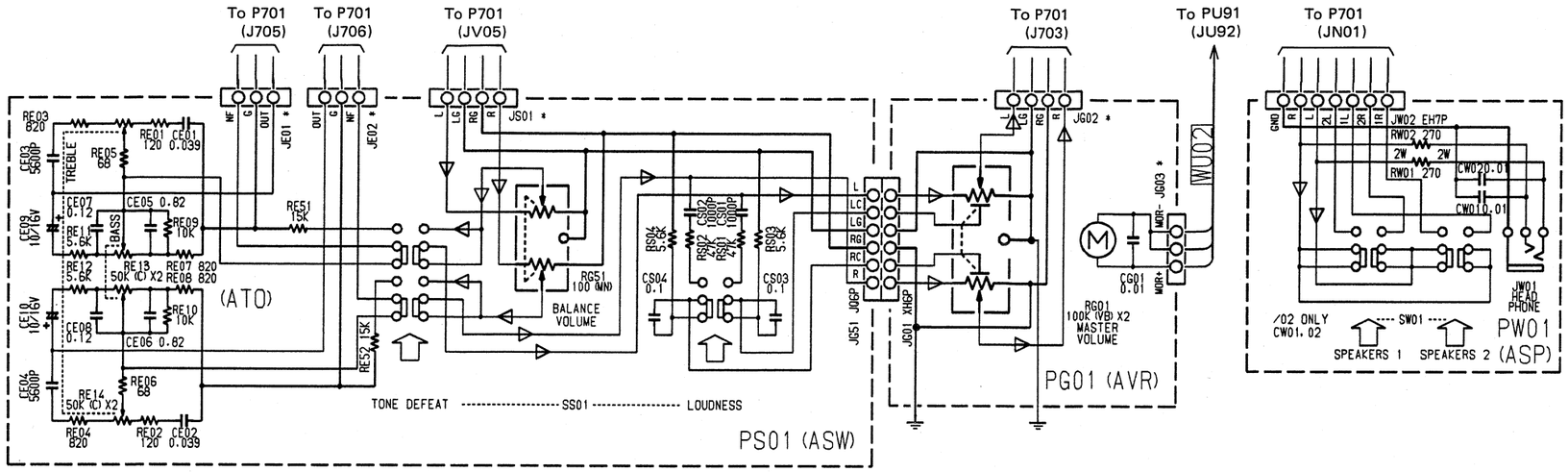
QN04 : TA7317P

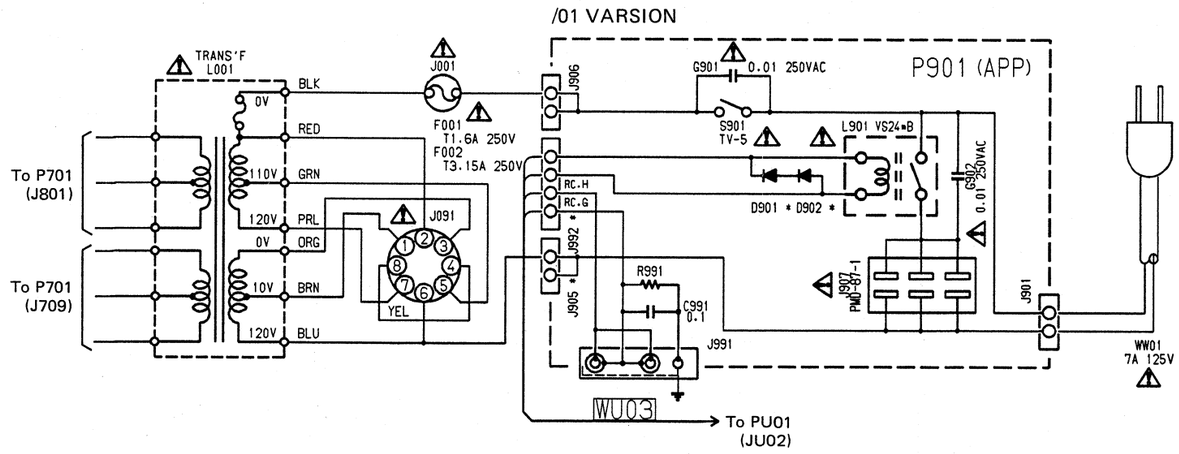


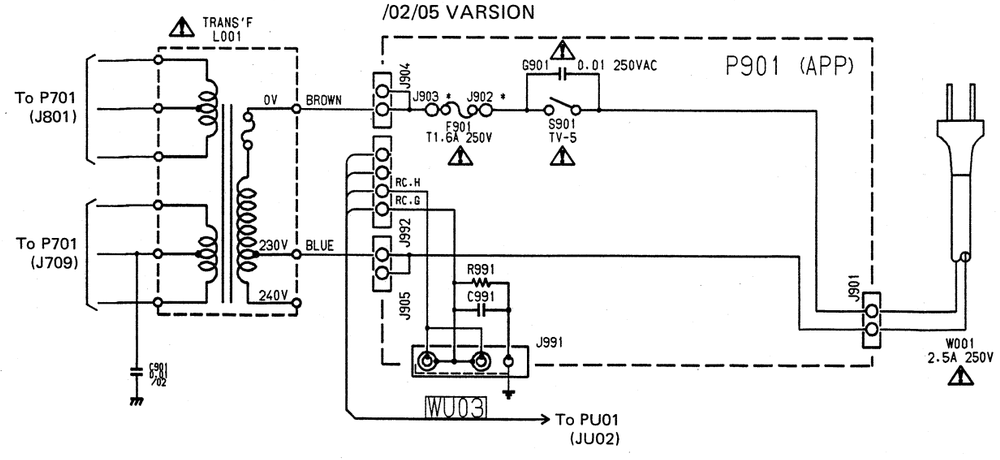
QV01,QV02 : LC7822



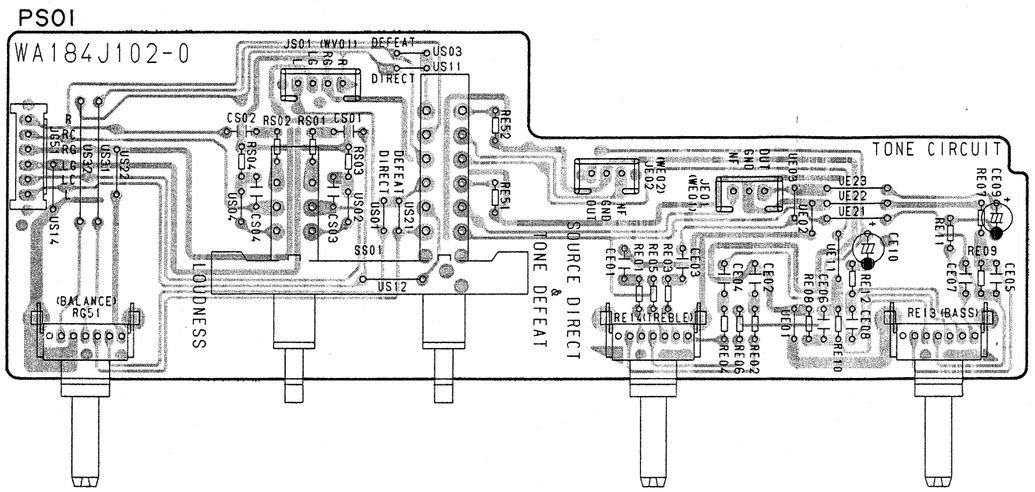

Q762 Q754 Q758 Q752 Q766 Q760 Q756 Q764
Q761 Q753 Q757 Q751 Q765 Q759 Q755 Q763
QN05
QN06
QV03～QV06
Q401
QV01
QN02 QN04 QN03
QV02
Q801
Q705 Q701～Q704 QN01 Q707
Q802 Q803
Q708
P701
BLACK
2SC3419
GREEN
D5SB 20
BLACK
2SC3419
GREEN
PROTECTOR
INPUT SELECTOR
VOLTAGE AMP
POWER AMP
LC7822
LC7822
AN7062
TAPE OUT
TAPE IN
DCC OUT
DCC IN
AUX
TUNER
CD
PHOND
PRE POWER SUPPLY
WA184J101-0


To P701 (J705)
To P701 (J706)
To P701 (JV05)
To P701 (J703)
To PU91 (JU92)
To P701 (JN01)
(ATO)
BALANCE VOLUME
TONE DEFEAT
SS01
LOUDNESS
PS01 (ASW)
PG01 (AVR)
RG01 100K (VB) X2 MASTER VOLUME
WU02
/02 ONLY CW01, 02
SW01
SPEAKERS 1
SPEAKERS 2
PW01 (ASP)
JW01 HEAD PHONE

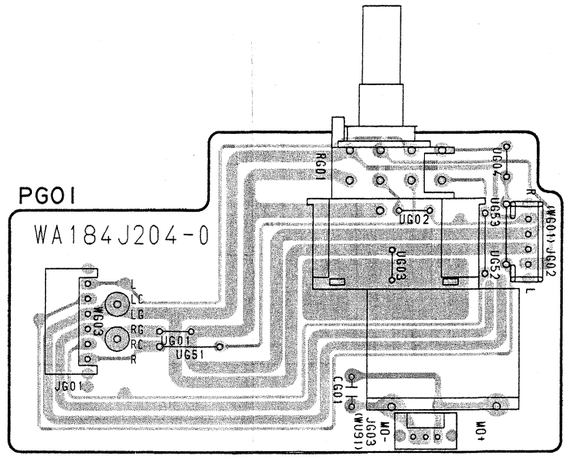

/01 VARSION
TRANS'F L001
To P701 (J801)
To P701 (J709)
0V
110V
120V
10V
BLK
RED
GRN
PRL
ORG
BRN
BLU
YEL
J001
F001 T1.6A 250V
F002 T3.15A 250V
J091
P901 (APP)
G901 0.01 250VAC
S901 TV-5
L901 VS24*B
D901 * D902 *
G902 0.01 250VAC
R991
C991 0.1
J991
J901
WW01 7A 125V
WU03
To PU01 (JU02)


/02/05 VARSION
TRANS'F L001
To P701 (J801)
To P701 (J709)
0V
230V
240V
BROWN
BLUE
F901 T1.6A 250V
S901 TV-5
G901 0.01 250VAC
P901 (APP)
R991
C991
J991
J901
W001 2.5A 250V
WU03
To PU01 (JU02)

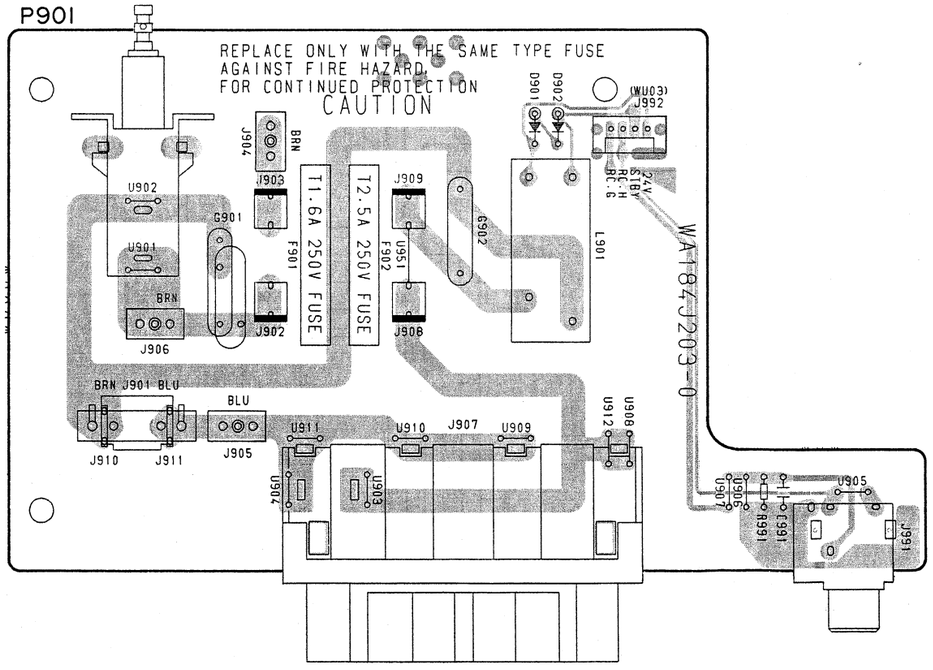
PS01



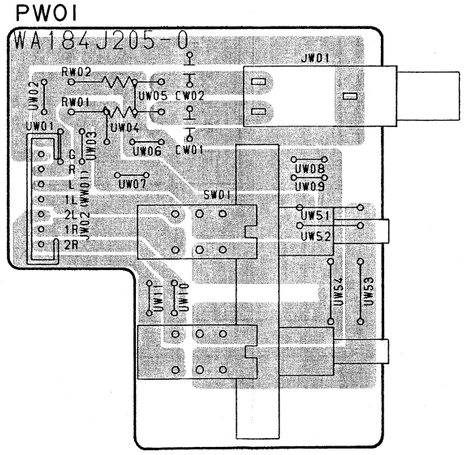
PG01

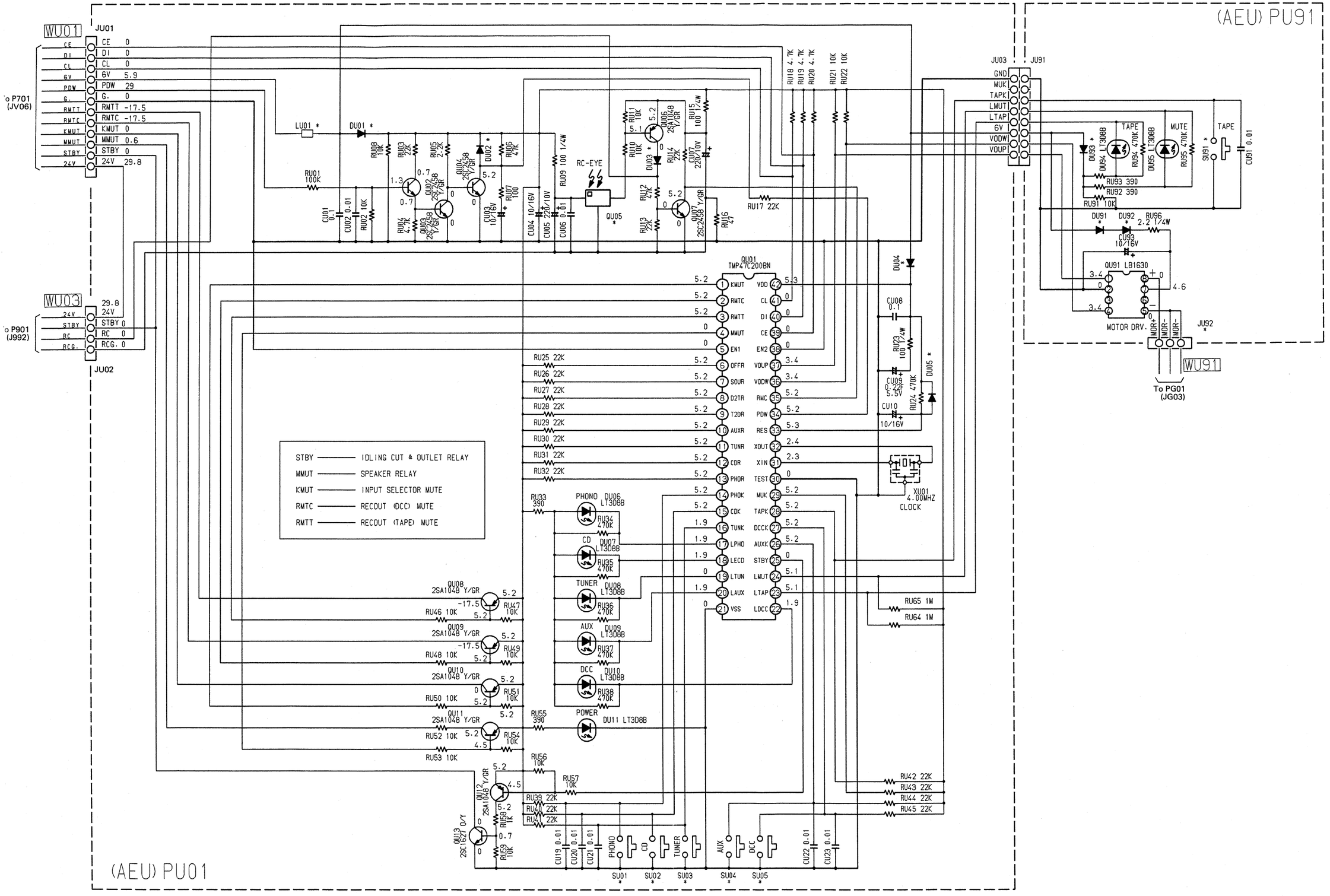


P901

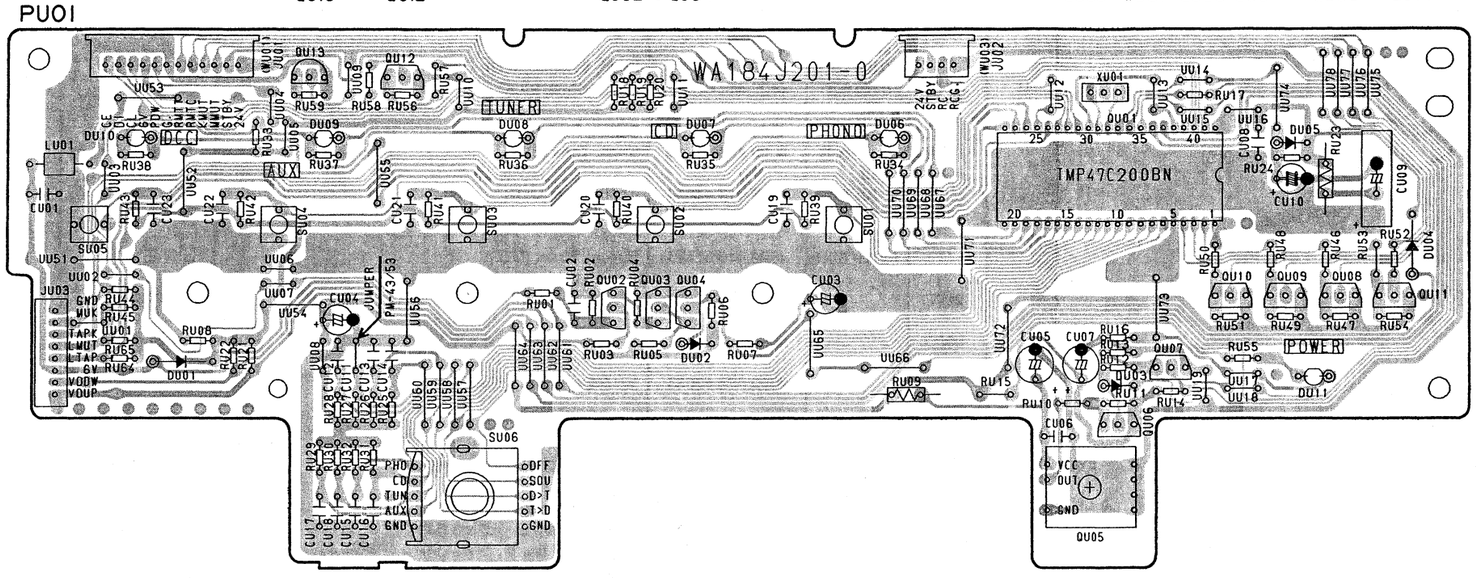


PW01

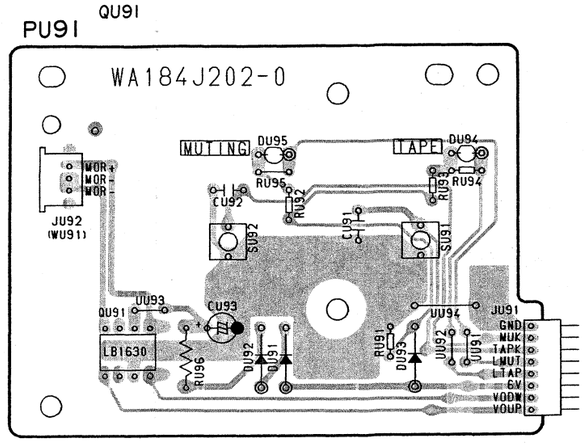



(AEU) PU01
(AEU) PU91
WU01
JU01
WU03
JU02
WU91
To PG01 (JG03)
To P701 (JV06)
To P901 (J992)
JU03
JU91
JU92
QU01 TMP47C200BN
XU01 4.00MHZ CLOCK
MOTOR DRV.
QU91 LB1630
STBY ——— IDLING CUT & OUTLET RELAY
MMUT ——— SPEAKER RELAY
KMUT ——— INPUT SELECTOR MUTE
RMTC ——— RECOUT (DCC) MUTE
RMTT ——— RECOUT (TAPE) MUTE
RC-EYE
PHONO
CD
TUNER
AUX
DCC
POWER
TAPE
MUTE

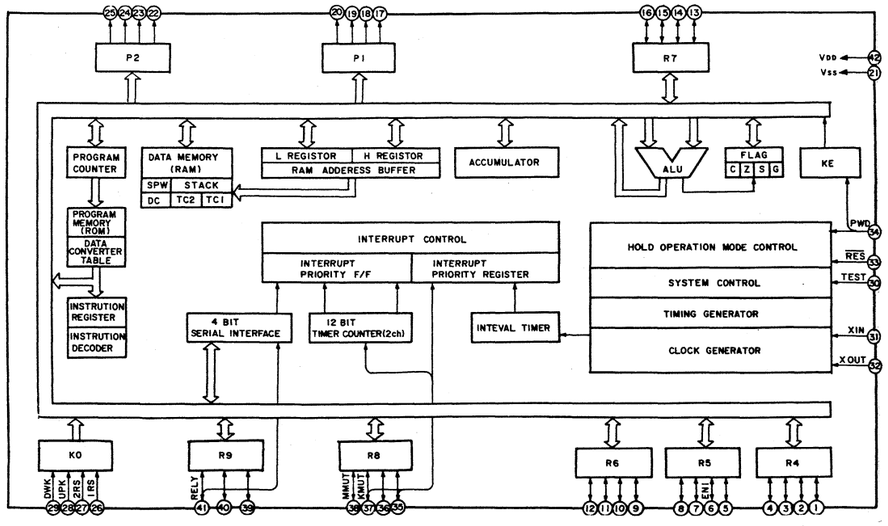
PU01



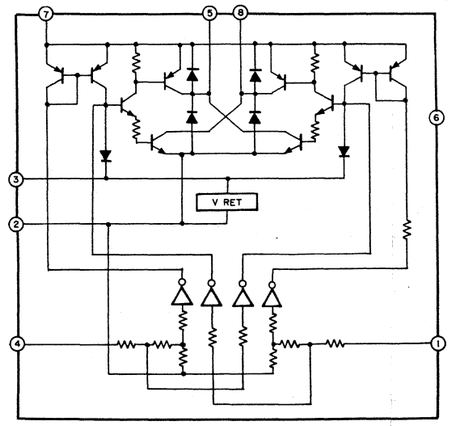
PU91



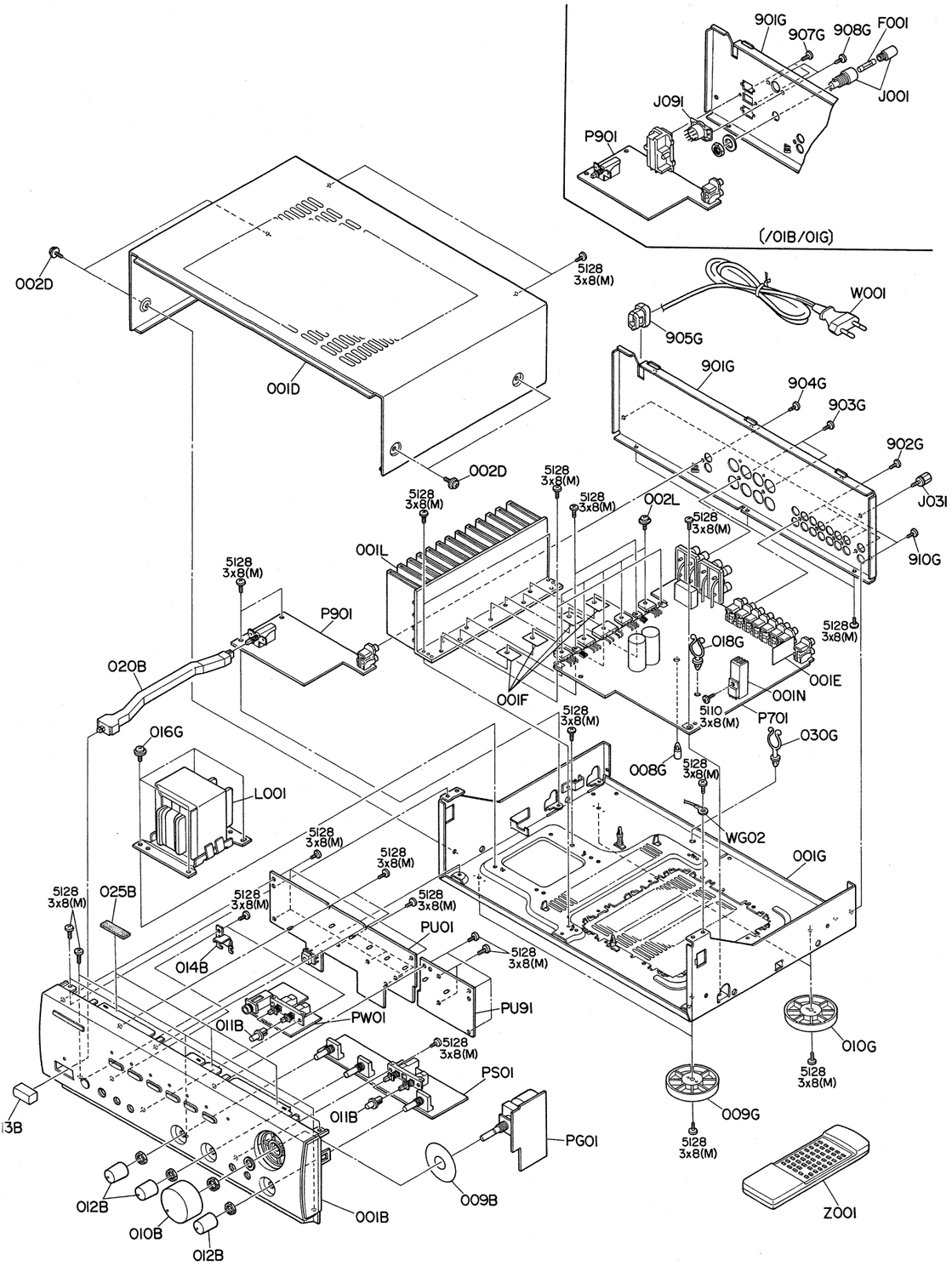
QU01 : TMP47C200BN



QU91 : LB1630



3. EXPLODED VIEW AND PARTS LIST



POS.N0	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO.
001B	/01B/02B /05B	4822 426 51672	Front Panel Assembly (BLK)	185J248510
	/01G/02G	4822 426 51673	Front Panel Assembly (GLD)	185J248540
010B	/01B/02B /05B	4822 413 41679	Knob, Volume (BLK)	063J154080
	/01G/02G	4822 413 41683	Knob, Volume (GLD)	063J154090
011B	/01B/02B /05B	4822 410 60343	Button, Push (BLK)	058J270030
	/01G/02G	4822 410 60334	Button, Push (GLD)	058J270130
012B	/01B/02B /05B	4822 413 41813	Knob, Tone (BLK)	185J154010
	/01G/02G	4822 413 41814	Knob, Tone (GLD)	185J154020
013B	/01B/02B /05B	4822 410 62744	Button, Power (BLK)	285K270010
	/01G/02G	4822 410 62745	Button, Power (GLD)	285K270110
020B		4822 404 60772	Link, Power SW.	185J121010
002D		4822 502 12511	B.T.Screw (W/W) 3 x 8 (M)	51260308M0
001F		4822 466 62033	Insulator, DENKA Sheet	242H120020
009G		4822 462 42045	Leg, Front	183J057010
010G		4822 462 42048	Leg, Rear	183J057110
016G		4822 502 12511	B.T.Screw (W/ W) 3 x 8 (M)	51260308M0
902G		4822 502 13636	PH, Tap. Screw 3 x 8 (M)	51270308M0
903G		4822 502 13636	PH, Tap. Screw 3 x 8 (M)	51270308M0
904G		4822 502 13636	PH, Tap. Screw 3 x 8 (M)	51270308M0
905G		4822 532 60948	Bushing, AC Cord	450H259010
907G	/01B/01G	4822 502 13636	PH, Tap. Screw 3 x 8 (M)	51270308M0
908G	/01B/01G	4822 502 13636	PH, Tap. Screw 3 x 8 (M)	51270308M0
910G		4822 502 13636	PH, Tap. Screw 3 x 8 (M)	51270308M0
002L		4822 502 12512	B.T.Screw (W/ W) 3 x 12 (M)	51260312M0
001T		4822 736 21809	User Manual	184J851310
▲ F001	/01B/01G	4822 253 30415	Fuse T1.6A 250V	FS10160850
▲ F002	/01B/01G	4822 070 33152	Fuse T3.15A 250V	FS10315850
▲ J001	/01B/01G	4822 256 30233	Jack, Fuse Holder	YJ08000290
J031		4822 290 40297	Terminal, GND	YL03010280
▲ J091	/01B/01G	4822 272 10327	Voltage Selector	BY05080070
▲ J092	/01B/01G	4822 265 10092	Jack, AC Adapter	YJ04001240
▲ L001	/01B/01G	4822 146 21743	Power Transformer	TS17650020
	/01B/02B /05B	4822 146 21744	Power Transformer	TS17650010
Z001		4822 218 10519	Unit K, Remoto Control	ZK185J0010

4. TEST EQUIPMENT REQUIRED FOR SERVICING

Item	Use
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
ACVTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO alignment
Circuit Tester	Trouble shooting
DCVTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to amplifier
Line Voltmeter	Monitors potential of primary power to amplifier
Variable Autotransformer	Adjust level of primery power to amplifier
Shorting Plug	Shorts amplifier input to eliminate noise pickup

5. IDLING CURRENT ADJUSTMENT

(1) Before switching the power ON, set the Master Volume control to the minimum position and the Balance and Tone controls to the center positions. Also set semi-fixed resistors R755 (L CH) and R756 (R CH) on PCB P701 to the center positions.

(2) Each of the cement resistors R769 (L CH) and R770 (R CH) on the PCB P701 is provided with three test points. Connect a digital voltmeter, set for the DC voltage input, to the test points at the two extremities of the three test points of R769 or R770

(3) After the setup above, switch the power ON and adjust semi-fixed resistor R755 (L CH) or R756 (R CH) on PCB P701 according to the digital voltmeter reading. The target setting value is 18 mV (50 mA) for both the L CH and R CH.

Please refer to the table below.

Elapsed time after power ON	Idling current setting value
1 min. - 2 min.	17 mV
2 min. - 3 min.	17.5 mV
More than 3 min.	18 mV

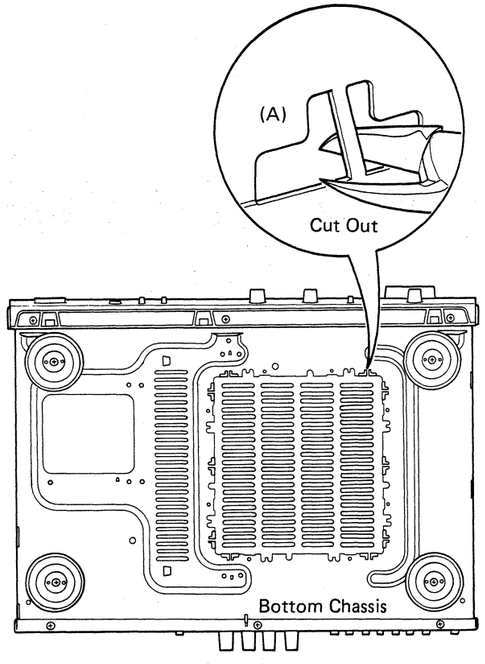
Note on Safety:
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

6. USE OF SERVICE HOLE

(1) If the use of the service hole is required, remove the cover by cutting 10 bridges (A) using a tool such as a pair of cutter.

(2) During this work, be careful of the sharp edges at the cut positions.

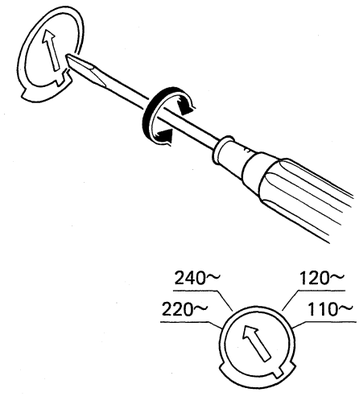
(3) After using the service hole, rotate the cover and fix it using screws [3 x 6 (M)].



7. VOLTAGE CONVERSION

● EUROPEAN MODEL ONLY (/ 01)
To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

VOLTAGE SELECTOR

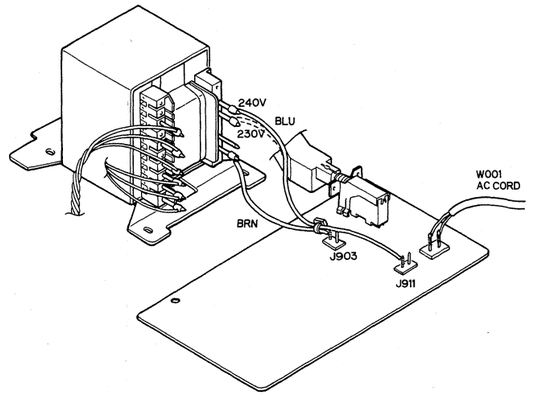


CAUTION
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.

8. HOW TO CHANGE THE SUPPLY VOLTAGE (/ 02 / 05 Versions)

With the / 05 Version, the rated supply voltage of 240V can be canged to 230V. In the same way, the 230V rated supply voltage of the / 02 Version can be changed to 240V.

Refer to the following diagram for the voltage change procedure.



9. MICROPROCESSOR
QU01 : TMP47C200BN

PIN NO.	PORT NAME		I/O	ACT	FUNCTION
1	R40	KMUT	O	L	SOURCE MUTE
2	R41	RMTC	O	L	TAPE OUT MUTE FOR DCC
3	R42	RMTT	O	L	TAPE OUT MUTE FOR TAPE
4	R43	MMUT	O	H	SPEAKER OUT MUTE
5	R50	EN1	I	—	MODEL SELECT #1
6	R51	OFFR	I	L	RECORDING OUT OFF
7	R52	SOUR	I	L	RECORDING OUT SOURCE
8	R53	D2TR	I	L	RECORDING OUT COPY DCC→TAPE
9	R60	T2DR	I	L	RECORDING OUT COPY TAPE→DCC
10	R61	AUXR	I	L	RECORDING OUT AUX
11	R62	TUNR	I	L	RECORDING OUT TUNER
12	R63	CDR	I	L	RECORDING OUT CD
13	R70	PHOR	I	L	RECORDING OUT PHONO
14	R71	PHOK	I	L	KEY INPUT PHONO
15	R72	CDK	I	L	KEY INPUT CD
16	R73	TUNK	I	L	KEY INPUT TUNER
17	P10	LPHO	O	L	LED INDICATOR PHONO
18	P11	LECD	O	L	LED INDICATOR CD
19	P12	LTUN	O	L	LED INDICATOR TUNER
20	P13	LAUX	O	L	LED INDICATOR AUX
21	VSS	VSS	—	—	GND

PIN NO.	PORT NAME		I/O	ACT	FUNCTION
22	P20	LDCC	O	L	LED INDICATOR DCC
23	P21	LTAP	O	L	LED INDICATOR TAPE
24	P22	LMUT	O	L	LED INDICATOR MUTE
25	P23	STBY	O	H	STAND-BY OTHER CONTROL
26	K00	AUXK	I	L	KEY INPUT AUX
27	K01	DCCK	I	L	KEY INPUT DCC
28	K02	TAPK	I	L	KEY INPUT TAPE
29	K03	MUK	I	L	KEY INPUT MANUAL MUTE
30	TEST	TEST	—	—	NOT USED (GND)
31	XIN	XIN	—	—	CLOCK 4.00 MHz
32	XOUT	XOUT	—	—	
33	$\overline{\text{RESET}}$	RES	I	L	SYSTEM RESET
34	$\overline{\text{HOLD}}$	PDW	I	L	POWER DOWN CHECK
35	R80	RMC	I	L	REMOTE CONTROL (RC-5) INPUT
36	R81	VODW	O	L	VOLUME CONTROL (DOWN)
37	R82	VOUP	O	L	VOLUME CONTROL (UP)
38	R83	EN2	I	—	MODEL SELECT #2
39	R90	CE	O	H	SERIAL OUTPUT (ENABLE)
40	R91	DL	O	H	SERIAL OUTPUT (DATA)
41	R92	CL	O	H	SERIAL OUTPUT (CLOCK)
42	VDD	VDD	—	—	POWER SUPPLY +5.4V

10. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R*** : (1) GD05 x x x 140, Carbon film fixed resistor, ± 5 % 1/4W
R*** : (2) GD05 x x x 160, Carbon film fixed resistor, ± 5 % 1/6W

① —— Resistance value

Examples ;
① Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C*** : CERAMIC CAP.
(1) DD1x x x x 370, Ceramic capacitor
Disc type
① ② Temp.coeff.P350~N1000,50V
② —— Capacity value
① —— Tolerance

Examples
① Tolerance (Capacity deviation)
± 0.25pF ... 0
± 0.5pF ... 1
± 5 % ... 5
* Tolerance of COMMON PARTS handled here are as follows :
0.5pF~ 5pF...± 0.25pF
6pF~ 10pF...± 0.5pF
12pF~ 560pF...± 5 %
② Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C*** : CERAMIC CAP.
(1) DK16 x x x 300, High dielectric constant ceramic capacitor
① Disc type
Temp.chara. 2B4, 50V
—— Capacity value

Examples
② Capacity value

100pF...101	1000pF...102	10000pF...103
470pF...471	2200pF...222	

C*** : ELECTROLY CAP.(⧺), FILM CAP.(⫟)
(1) EA x x x x x x 10, Electrolytic capacitor
One-way lead type, Tolerance ± 20 %
① ② —— Working voltage
—— Capacity value

Examples
① Capacity value

0.1μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...118
		2200μF...228

② Working voltage

6.3V...006	25V...025	
10V...010	35V...035	
16V...016	50V...050	

(2) DF15 x x x 350, Plastic film capacitor
One-way type, Mylar ± 5 % 50V
① —— Capacity value

Examples
① Capacity value

0.001μF(1000pF)...102	0.1μF...104
0.0018μF.....182	0.56μF...564
0.01μF.....103	1μF...105
0.015μF.....153	

NOTE : The above CODES (R***,R***,C***,C*** and C***) are omitted on the schematic diagram in some case.
On the occasion, be confirmed the common parts on the parts list.

POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO.
			PG01-MASTER VOLUME CIRCUIT BOARD	
PG01			MASTER VOLUME PCB	WA184J2040
CG01		4822 122 30043	Cermic Cap. 0.01μF +80% -20% 50V	DK18103310
RG01		4822 101 30832	Variable Resistor 100K Ω (VB) x 2	RY01040230
			PS01-TONE / DIRECT / LOUDNESS / BAL. CIRCUIT BOARD	
PS01			TONE / DIRECT / LOUDNESS / BAL. PCB	WA184J1020
			PS01-CAPACITORS	
CE09		4822 124 90352	Elect 10μF 16V	OA10601620
CE10		4822 124 90352	Elect 10μF 16V	OA10601620
			PS01-CAPACITORS (COMMON)	
C***			Plastic Film Capacitor, ±5% 50V: CE01~CE08, CS01~CS04	
			PS01-RESISTORS	
RE13		4822 101 30831	50K Ω (C), Variable Bass	RM05032000
RE14		4822 101 30831	50K Ω (C), Variable Treble	RM05032000
RG51		4822 101 30828	100K Ω (MN), Variable Balance	RM01041540
			PS01-RESISTOR (COMMON)	
R***			Carbon Film Fixed Resistor, ±5%: RE01~RE12, RE51, RE52, RS01~RS04	
			PS01-MISCELLANEOUS	
SS01		4822 276 13435	Push Switch, Direct/ Loudness	SP04020600
			PU01-U-COM CIRCUIT BOARD	
PU01			U-COM PCB	WA184J2010
			PU01-CAPACITORS	
CU01		4822 122 40617	Ceramic 0.1μF +80% -20% 50V	DD38104010
CU02		4822 122 30043	Ceramic 0.01μF +80% -20% 50V	DK18103310
CU03		4822 124 90352	Elect 10μF 16V	OA10601620
CU04		4822 124 90352	Elect 10μF 16V	OA10601620
CU05		4822 124 90363	Elect 220μF 10V	OA22701020
CU06		4822 122 30043	Ceramic 0.01μF +80% -20% 50V	DK18103310
CU07		4822 124 90363	Elect 220μF 10V	OA22701020
CU08		4822 122 40617	Ceramic 0.1μF +80% -20% 50V	DD38104010
CU09		4822 124 90406	Big Elect 0.022F 5.5V	EX22300530
CU10		4822 124 90352	Elect 10μF 16V	OA10601620
CU19 ~ CU23		4822 122 30043	Ceramic 0.01μF +80% -20% 50V	DK18103310
			PU01-RESISTORS	
RU09		4822 050 21021	100 Ω ±5% 1/4W	GG05101140
RU15		4822 050 21021	100 Ω ±5% 1/4W	GG05101140
RU23		4822 050 21021	100 Ω ±5% 1/4W	GG05101140
			PU01-RESISTORS (COMMON)	
R***			Carbon Film Fixed Resistor, ±5%: RU01~RU08, RU10~RU14, RU16~RU22, RU24~RU59, RU64, RU65	
			PU01-SEMICONDUCTORS	
DU01		4822 130 32508	Diode DSF10C/ RL103E	HD20003000
DU02		4822 130 33305	Diode 1SS176, etc.	HD20002000
DU04		4822 130 32508	Diode DSF10C/ RL103E	HD20003000
DU05		4822 130 33305	Diode 1SS176, etc.	HD20002000
DU06 ~ DU11		4822 130 80326	L.E.D. LT3D8B (RED)	HI10062320

POS.N0	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO.
QU01		4822 209 32576	Microprocessor TMP47C200BN	HU10085050
QU02		4822 130 60839	Transistor 2SC2458 (Y/ GR)	HT324582B0
QU03		4822 130 60839	Transistor 2SC2458 (Y/ GR)	HT324582B0
QU04		4822 130 60839	Transistor 2SC2458 (Y/ GR)	HT324582B0
QU05		4822 130 82139	Photo Unit PAS-C0618	HW10005550
QU06		4822 130 60107	Transistor 2SA1048 (Y/ GR)	HT110482B0
QU07		4822 130 60839	Transistor 2SC2458 (Y/ GR)	HT324582B0
QU08 ~ QU12		4822 130 60107	Transistor 2SA1048 (Y/ GR)	HT110482B0
QU13		4822 130 60696	Transistor 2SC1627 (O/ Y)	HT316272B0
			PU01-MISCELLANEOUS	
LU01		4822 158 60605	Ferrite Core	FC90050060
SU01 ~ SU05		4822 276 20508	Push Switch, Tact	SP01011280
XU01		4822 242 72223	Ceramic Resonator 4.00MHz	FQ04004030
			PU91-MOTOR VOL. DRIVE CIRCUIT BOARD	
PU91			MOTOR VOL. DRIVE PCB	WA184J2020
			PU91-CAPACITORS	
CU91		4822 122 30043	Ceramic 0.01μF +80% -20% 50V	DK18103310
CU93		4822 124 90352	Elect 10μF 16V	OA10601620
			PU91-RESISTORS (COMMON)	
R***			Carbon Film Fixed Resistor, ±5%: RU91~RU96	
			PU91-SEMICONDUCTORS	
DU91		4822 130 32508	Diode DSF10C/ RL103E	HD20003000
DU92		4822 130 32508	Diode DSF10C/ RL103E	HD20003000
DU93		4822 130 32508	Diode DSF10C/ RL103E	HD20003000
DU94		4822 130 80326	L.E.D. LT3D8B (RED)	HI10062320
DU95		4822 130 80326	L.E.D. LT3D8B (RED)	HI10062320
QU91		4822 209 73287	IC LB1630	HC10235030
			PU91-MISCELLANEOUS	
SU91		4822 276 20508	Push Switch, Tact	SP01011280
			PW01-HEADPHONE / SPK 1/2 SW. CIRCUIT BOARD	
PW01			HEADPHONE/ SPK 1/2 SW. PCB	WA184J2050
CW01	/02B/ 02G	4822 122 30043	Ceramic Cap. 0.01μF +80% -20% 50V	DK18103310
CW02	/02B/ 02G	4822 122 30043	Ceramic Cap. 0.01μF +80% -20% 50V	DK18103310
RW01		4822 116 60455	Resistor 270Ω ±5% 2W Metal	NK05271020
RW02		4822 116 60455	Resistor 270Ω ±5% 2W Metal	NK05271020
JW01	/01B/ 02B /05B	4822 267 31274	Jack, Headphone	YJ01003340
	/01G/ 02G	4822 267 31365	Jack, Headphone	YJ01003410
SW01		4822 276 12423	Push Switch, Speaker 1/2	SP02021010
			P701-MAIN CIRCUIT BOARD	
P701			MAIN PCB	WA184J1010
			P701-CAPACITORS	
CN01		4822 124 22274	Elect 4.7μF 50V	OA47505020
CN02		4822 124 41543	Elect 1μF 50V	OA10505020
CN04		4822 124 22275	Elect 47μF 10V	OA47601020
CN05		4822 124 23417	Elect 33μF 10V	OA33601020
CN06		4822 124 22273	Elect 0.47μF 50V	OA47405020

POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION					PART NO.
CN07		4822 124 41539	Elect	47μF			16V	OA47601620
CN08		4822 122 40617	Ceramic	0.1μF	+80%	-20%	50V	DD38104010
CV01 ~ CV14		4822 122 30043	Ceramic	0.01μF	+80%	-20%	50V	DK18103310
CV15 ~ CV28	/02B/02G	4822 126 11069	Ceramic	150pF	±10%		50V	DA16151110
CV29 ~ CV32		4822 122 30043	Ceramic	0.01μF	+80%	-20%	50V	DK18103310
CV33		4822 124 22274	Elect	4.7μF			50V	OA47505020
CV34		4822 124 22274	Elect	4.7μF			50V	OA47505020
CV35 ~ CV38		4822 126 11127	Ceramic	470pF	±10%		50V	DA16471110
CV41 ~ CV44		4822 122 40617	Ceramic	0.1μF	+80%	-20%	50V	DD38104010
C401		4822 122 30043	Ceramic	0.01μF	+80%	-20%	50V	DK18103310
C402		4822 122 30043	Ceramic	0.01μF	+80%	-20%	50V	DK18103310
C403	/01B/01G /05B	4822 126 11069	Ceramic	150pF	±10%		50V	DA16151110
C404	/01B/01G /05B	4822 126 11069	Ceramic	150pF	±10%		50V	DA16151110
C405		4822 124 90352	Elect	10μF			16V	OA10601620
C406		4822 124 90352	Elect	10μF			16V	OA10601620
C407		4822 124 41539	Elect	47μF			16V	OA47601620
C408		4822 124 41539	Elect	47μF			16V	OA47601620
C409	/02B/02G	4822 126 11127	Ceramic	470pF	±10%		50V	DA16471110
C410	/02B/02G	4822 126 11127	Ceramic	470pF	±10%		50V	DA16471110
C417		4822 124 90357	Elect	2.2μF			50V	OA22505020
C418		4822 124 90357	Elect	2.2μF			50V	OA22505020
C421		4822 124 41535	Elect	100μF			25V	OA10702520
C422		4822 124 41535	Elect	100μF			25V	OA10702520
C701		4822 124 22571	Elect	10μF			50V	OA10605020
C702		4822 124 22571	Elect	10μF			50V	OA10605020
C703		4822 126 10364	Ceramic	100pF	±10%		50V	DA16101110
C704		4822 126 10364	Ceramic	100pF	±10%		50V	DA16101110
C705		4822 124 90354	Elect	100μF			16V	OA10701620
C706		4822 124 90354	Elect	100μF			16V	OA10701620
C707		4822 126 11069	Ceramic	150pF	±10%		50V	DA16151110
C708		4822 126 11069	Ceramic	150pF	±10%		50V	DA16151110
C709		4822 126 11068	Ceramic	39pF	±10%		50V	DA16390110
C710		4822 126 11068	Ceramic	39pF	±10%		50V	DA16390110
C711		4822 121 43127	Film	5pF	±10%		50V	DF56050090
C712		4822 121 43127	Film	5pF	±10%		50V	DF56050090
C713		4822 121 43128	Film	10pF	±10%		50V	DF56100090
C714		4822 121 43128	Film	10pF	±10%		50V	DF56100090
C715		4822 124 90362	Elect	22μF			50V	OA22605020
C716		4822 124 90362	Elect	22μF			50V	OA22605020
C717		4822 124 90366	Elect	220μF			50V	OA22705020
C718		4822 124 90366	Elect	220μF			50V	OA22705020
C719		4822 124 90361	Elect	22μF			25V	OA22602520
C720		4822 124 90361	Elect	22μF			25V	OA22602520
C721		4822 122 40617	Ceramic	0.1μF	+80%	-20%	50V	DD38104010
C723		4822 122 40617	Ceramic	0.1μF	+80%	-20%	50V	DD38104010
C724		4822 122 40617	Ceramic	0.1μF	+80%	-20%	50V	DD38104010
C751		4822 124 90354	Elect	100μF			16V	OA10701620
C752		4822 124 90354	Elect	100μF			16V	OA10701620
C753 ~ C756		4822 121 50548	Film	120pF	±5%		125V	DF55121510
C761 ~ C764	/02B/02G	4822 122 30043	Ceramic	0.01μF	+80%	-20%	50V	DK18103310
▲C765		4822 124 42042	Elect	8200μF			45V	OB82804510
▲C766		4822 124 42042	Elect	8200μF			45V	OB82804510
C801		4822 122 30043	Ceramic	0.01μF	+80%	-20%	50V	DK18103310
C802		4822 122 30043	Ceramic	0.01μF	+80%	-20%	50V	DK18103310
C803		4822 124 41543	Elect	1μF			50V	OA10505020
C805		4822 124 90356	Elect	1000μF			35V	OA10803520
C806		4822 124 41541	Elect	470μF			35V	OA47703520

POS.NO	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO.
C807 ~ C810		4822 124 90362	Elect 22µF 50V	OA22605020
C811		4822 124 90366	Elect 220µF 50V	OA22705020
C812		4822 124 22695	Elect 2200µF 35V	OA22803520
C813		4822 124 90362	Elect 22µF 50V	OA22605020
G701		4822 121 20263	Component RFD2B474K	BF47400010
			P701-CAPACITORS (COMMON)	
C***			Plastic Film Capacitor, ±10%: CN03, C419, C420	
C***			Plastic Film Capacitor, ±5%: CV39, CV40, C411~C416, C757, C758, (C759, C760 [/ 02B/ 02G/ 05B])	
C***			High Dielectric Constant Ceramic Capacitor, 50V: (C403, C404 [/ 02B/ 02G])	
			P701-RESISTORS	
RN01		4822 052 10102	1K Ω ±5% 1/6W	GG05102160
RN02		4822 052 10102	1K Ω ±5% 1/6W	GG05102160
RN15		4822 050 23303	33K Ω ±5% 1/4W	GG05333140
▲ RN19		4822 113 90119	22 Ω ±2% 1/4W, Fusible	NF02220140
RN20		4822 050 21503	15K Ω ±5% 1/2W	GG05153120
▲ R417		4822 111 90731	47 Ω ±2% 1/4W, Fusible	NF02470140
▲ R418		4822 111 90731	47 Ω ±2% 1/4W, Fusible	NF02470140
R713		4822 050 23303	33K Ω ±5% 1/4W	GG05333140
R714		4822 050 23303	33K Ω ±5% 1/4W	GG05333140
R719	/ 02B/ 02G / 05B	4822 050 26809	68 Ω ±5% 1/6W	GG05680160
R720	/ 02B/ 02G / 05B	4822 050 26809	68 Ω ±5% 1/6W	GG05680160
R721	/ 02B/ 02G / 05B	4822 117 10159	120 Ω ±5% 1/6W	GG05121160
R722	/ 02B/ 02G / 05B	4822 117 10159	120 Ω ±5% 1/6W	GG05121160
R732		4822 053 10222	2.2K Ω ±5% 1W	GA05222010
▲ R733		4822 116 60313	10 Ω ±5% 1/2W, Fusible	NH05100120
▲ R734		4822 116 60313	10 Ω ±5% 1/2W, Fusible	NH05100120
R755		4822 100 11426	470 Ω, Trimming	RA04710780
R756		4822 100 11426	470 Ω, Trimming	RA04710780
R757 ~ R760		4822 052 10101	100 Ω ±5% 1/6W	GG05101160
R761		4822 052 10102	1K Ω ±5% 1/6W	GG05102160
R762		4822 052 10102	1K Ω ±5% 1/6W	GG05102160
R763		4822 053 10331	330 Ω ±5% 1W	GA05331010
R764		4822 053 10331	330 Ω ±5% 1W	GA05331010
R765 ~ R768		4822 116 83963	2.2 Ω ±5% 1/4W	GG05022140
R769		4822 116 82049	0.18 Ω x 2 3W	BZ10182010
R770		4822 116 82049	0.18 Ω x 2 3W	BZ10182010
R771		4822 052 10221	220 Ω ±5% 1/6W	GG05221160
R772		4822 052 10221	220 Ω ±5% 1/6W	GG05221160
R773		4822 053 11109	10 Ω ±5% 2W	GA05100020
R774		4822 053 11109	10 Ω ±5% 2W	GA05100020
R775		4822 117 10002	2.2K Ω ±5% 1/2W	GG05222120
▲ R801		4822 117 10158	1 Ω ±5% 1/4W	GG05010140
▲ R802		4822 117 10158	1 Ω ±5% 1/4W	GG05010140
▲ R803		4822 111 50613	22 Ω ±5% 1/2W	GG05220120
			P701-RESISTORS (COMMON)	
R***			Carbon Film Fixed Resistor, ±5%: RN03~RN14, RN16~RN18, RN21~RN25, RV01~RV17, RV19~RV28, RV30~RV32, R401~R416, R419, R420, R703~R712, R715~R718, (R719~R722 [/ 01B/ 01G]) R723~R731, R735~R739, R751~R754, R777, R778	

POS.N0	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION		PART NO.
			P701-SEMICONDUCTORS		
DN01		4822 130 80837	Diode	HSS81	HD20027010
DN02		4822 130 80837	Diode	HSS81	HD20027010
DN03		4822 130 33305	Diode	1SS176, etc.	HD20002000
DN04		4822 130 33305	Diode	1SS176, etc.	HD20002000
DN05		4822 130 80839	Diode	S5688G	HD20029050
DN06		4822 130 33305	Diode	1SS176, etc.	HD20002000
DV01		4822 130 33305	Diode	1SS176, etc.	HD20002000
DV02		4822 130 33305	Diode	1SS176, etc.	HD20002000
D701 ~ D704		4822 130 33305	Diode	1SS176, etc.	HD20002000
D705		4822 130 80273	Zener	NTJ8.2C	HD30821000
D706		4822 130 80322	Zener	NTJ15B	HD31501000
▲ D707		4822 130 83438	Diode	D5SB-20	HE20016290
▲ D801		4822 130 80839	Diode	S5688G	HD20029050
▲ D802	/02B/02G /05B	4822 130 80839	Diode	S5688G	HD20029050
▲ D803		4822 130 80839	Diode	S5688G	HD20029050
▲ D804	/02B/02G /05B	4822 130 80839	Diode	S5688G	HD20029050
▲ D805		4822 130 80839	Diode	S5688G	HD20029050
▲ D806	/02B/02G /05B	4822 130 80839	Diode	S5688G	HD20029050
▲ D807		4822 130 80839	Diode	S5688G	HD20029050
▲ D808	/02B/02G /05B	4822 130 80839	Diode	S5688G	HD20029050
▲ D809		4822 130 80839	Diode	S5688G	HD20029050
▲ D810	/02B/02G /05B	4822 130 80839	Diode	S5688G	HD20029050
D811		4822 130 32508	Diode	RL103E/DSF10C	HD20003000
QN01		4822 130 43233	Transistor	2SC2240 (GR/BL)	HT322402A0
QN02		4822 130 43233	Transistor	2SC2240 (GR/BL)	HT322402A0
QN03		4822 130 42951	Transistor	2SA970 (GR/BL)	HT109702A0
QN04		4822 209 83312	IC	TA7317P	HC10042050
QN05		4822 130 60107	Transistor	2SA1048 (Y/GR)	HT110482B0
QN06		4822 130 60839	Transistor	2SC2458 (Y/GR)	HT324582B0
QV01		4822 209 73321	IC	LC7822	HC10241030
QV02		4822 209 73321	IC	LC7822	HC10241030
QV03 ~ QV06		4822 130 43819	Transistor	2SC2878 (A/B)	HT328782A0
Q401		4822 209 73064	IC	NJM2068DD	HC10053090
Q701		4822 130 42951	Transistor	2SA970 (GR/BL)	HT109702A0
Q702		4822 130 42951	Transistor	2SA970 (GR/BL)	HT109702A0
Q703		4822 130 43233	Transistor	2SC2240 (GR/BL)	HT322402A0
Q704		4822 130 43233	Transistor	2SC2240 (GR/BL)	HT322402A0
Q705		4822 209 83732	IC	AN7062	HC10066020
Q707		4822 130 43819	Transistor	2SC2878 (A/B)	HT328782A0
Q708		4822 130 43819	Transistor	2SC2878 (A/B)	HT328782A0
Q751		4822 130 60117	Transistor	2SC3419 (Y)	HT334191Y0
Q752		4822 130 60117	Transistor	2SC3419 (Y)	HT334191Y0
Q753		4822 130 43233	Transistor	2SC2240 (GR/BL)	HT322402A0
Q754		4822 130 43233	Transistor	2SC2240 (GR/BL)	HT322402A0
Q755		4822 130 42951	Transistor	2SA970 (GR/BL)	HT109702A0
Q756		4822 130 42951	Transistor	2SA970 (GR/BL)	HT109702A0
▲ Q757		4822 130 62335	Transistor	2SD2033	HT420331E0
▲ Q758		4822 130 62335	Transistor	2SD2033	HT420331E0
▲ Q759		4822 130 62334	Transistor	2SB1353	HT213531E0
▲ Q760		4822 130 62334	Transistor	2SB1353	HT213531E0
▲ Q761		4822 130 61319	Transistor	2SC3181 (R/O)	HT331812A0
▲ Q762		4822 130 61319	Transistor	2SC3181 (R/O)	HT331812A0
▲ Q763		4822 130 43018	Transistor	2SA1264 (R/O)	HT112642A0
▲ Q764		4822 130 43018	Transistor	2SA1264 (R/O)	HT112642A0
Q765		4822 130 90347	Photo Unit	PC-817	HW10006320
Q766		4822 130 90347	Photo Unit	PC-817	HW10006320
▲ Q801		4822 209 62423	IC	78M06F	HC3850609F
▲ Q802		4822 209 80675	IC	78M18F	HC3851809F
▲ Q803		4822 209 31788	IC	79M18F	HC3951809F

POS.N0	VERSION	PART NO. (FOR EUROPE)	DESCRIPTION	PART NO.
			P701-MISCELLANEOUS	
JV01		4822 290 81598	Terminal, 2P RCA	YT02021130
JV02		4822 290 81603	Terminal, 4P RCA	YT02041030
JV03		4822 290 81603	Terminal, 4P RCA	YT02041030
JV04		4822 290 81603	Terminal, 4P RCA	YT02041030
J401		4822 290 81598	Terminal, 2P RCA	YT02021130
J701		4822 290 61179	Terminal, Speaker	YT01080120
▲ LN01		4822 280 70354	Relay VB24MBU	LY20240310
L751		4822 157 63085	Air Coil, SPK	ML08010010
L752		4822 157 63085	Air Coil, SPK	ML08010010
			P901-POWER SW. / AC FUSE CIRCUIT BOARD	
P901			POWER SW. / AC FUSE PCB	WA184J2030
			P901-CAPACITORS	
C901	/02B/02G	4822 122 30043	Ceramic 0.01μF +80% -20% 50V	DK18103310
C991		4822 122 40617	Ceramic 0.1μF +80% -20% 50V	DD38104010
▲ G901	/01B/01G /02B/02G	4822 121 43732	Film 0.01μF ±20% 250V AC	DF77103500
▲ G901	/05B	4822 122 33276	Ceramic 0.01μF ±20% 50V	DK17103840
▲ G902	/01B/01G	4822 121 43732	Film 0.01μF ±20% 250V AC	DF77103500
			P901-SEMICONDUCTORS	
D901	/01B/01G	4822 130 33305	Diode 1SS176, etc.	HD20002000
D902	/01B/01G	4822 130 33305	Diode 1SS176, etc.	HD20002000
			P901-MISCELLANEOUS	
▲ F901	/02B/02G /05B	4822 253 30415	Fuse T1.6A 250V	FS10160850
▲ J907	/01B/01G	4822 267 40815	Jack, AC Outlet 3P	YJ04001470
J991		4822 267 41009	Terminal, 2P RCA	YT02020890
▲ L901	/01B/01G	4822 280 20517	Relay V524MBU	LY10240190
▲ S901		4822 276 12924	Push Switch, Power	SP01011540

NOTE ON SAFETY :
Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.